

CLAIMS

1. High burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone characterized by containing,
- 5 by wt%,
C: 0.01 to 0.1%,
Si: 0.01 to 2%,
Mn: 0.05 to 3%,
P \leq 0.1%,
10 S \leq 0.03%,
Al: 0.005 to 1%,
N: 0.0005 to 0.005%, and
Ti: 0.05 to 0.5%
- and further containing C, S, N, Ti, Cr, and Mo in ranges
- 15 satisfying
- $0 < C - (12/48Ti - 12/14N - 12/32S) \leq 0.05\%$ and
 $Mo + Cr \geq 0.2\%$, $Cr \leq 0.5\%$, and $Mo \leq 0.5\%$,
the balance comprising Fe and unavoidable impurities,
wherein the microstructure is comprised of ferrite or
- 20 ferrite and bainite.
2. High burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone characterized in that
- said steel further contains, by wt%,
- 25 Nb: 0.01 to 0.5%
- and further contains Nb in a range satisfying
- $0 < C - (12/48Ti - 12/93Nb - 12/14N - 12/32S) \leq 0.05\%$,
the balance comprising Fe and unavoidable impurities.
3. High burring, high strength steel sheet
- 30 excellent in softening resistance of the weld heat affected zone as set forth in claim 1 or 2, characterized by further containing, by wt%, one or two of Ca: 0.0005 to 0.002%, a REM: 0.0005 to 0.02%, Cu: 0.2 to 1.2%, Ni: 0.1 to 0.6%, and B: 0.0002 to 0.002%.
- 35 4. High burring, high strength steel sheet excellent in softening resistance of the weld heat

, affected zone as set forth in any one of claims 1 to 3, characterized by being automotive thin steel sheet coated with zinc.

5 5. A method of production of high burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone characterized by hot rolling a slab having the ingredients for obtaining the thin steel sheet as set forth in any one of claims 1 to 3 at which time ending finish rolling at a temperature region
10 of the Ar_3 transformation point temperature + 30°C or more, then cooling within 10 seconds by a cooling rate of an average cooling rate until the end of cooling of 50°C/sec or more until a temperature region of 700°C or less, and coiling at a coiling temperature of 350°C to
15 650°C.

 6. A method of production of high burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone characterized by hot rolling a slab having the ingredients for obtaining the thin
20 steel sheet as set forth in any one of claims 1 to 3, pickling it, cold rolling it, then holding it at a temperature region of 800°C or more for 5 to 150 seconds, then cooling it by a cooling rate of an average cooling rate of 50°C/sec or more until a temperature region of
25 700°C or less as a heat treatment process.

 7. A method of production of high burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone as set forth in claim 5, characterized by dipping the steel sheet in a zinc
30 coating bath after the end of the hot rolling process to coat the surface with zinc.

 8. A method of production of high burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone as set forth in claim 6, characterized by dipping the steel sheet in a zinc
35 coating bath after the end of the heat treatment process

to coat the surface with zinc.

5 9. A method of production of high burring, high strength steel sheet excellent in softening resistance of the weld heat affected zone as set forth in claim 7 or 8, characterized by alloying after dipping the steel sheet in a zinc coating bath for coating zinc.